

Comparison Of Savings From The CEC And NTIA DTA Standards

Prepared by the California Energy Commission

August 3, 2007

Digital television adapters (DTAs) are devices that will be required when free-over-the-air (or terrestrial) broadcast of analogue TV signals ends in April 2009. At that point, all analogue TVs will require a box to convert the digital signal back to analogue.

The CEC efficiency standard for DTAs was maximum “active” power (i.e., “on”) of 8 Watts, and 1 Watt “standby.” Table 1 shows the expected energy (kWh), peak (MW), and dollar savings that were expected from the standard based on reasonable assumptions. The comparison assumes the “basecase” DTA would use 12 W in active mode, and 5 W in standby, and that both DTAs would be in active mode 90% of the time, and standby 10% of the time. The table shows that the CEC standard would have saved for each DTA: 35 kWh/year, \$5/year in lower utility bills, and \$26 over the expected five year life of the DTA. Therefore the standard would have saved significant energy, and was cost-effective to consumers, since the incremental retail cost was expected to be less than \$26/DTA.

Subsequent to the adoption of the CEC standard, Congress enacted legislation related to the termination of free-over-the-air analogue television signals as part of the transition to all-digital broadcast, which included creation of a program to subsidize the purchase of DTAs, since Congress was concerned about the reaction of consumers to having to purchase DTAs simply to preserve the previous functionality of their TVs. Responsibility for the creation of the program was given to the National Telecommunications Infrastructure Administration (NTIA), which is part of the U.S. Department of Commerce.

As part of the process of creating the definitions for DTAs that would receive the subsidy, some parties recommended that NTIA include efficiency requirements. Walmart recommended that NTIA specify that DTAs must have a maximum standby power of 2 W, and have a feature called “auto power-down,” which would automatically put the DTA in standby after a period of non-use, such as four hours. There is an obvious trade-off between the CEC standard and the Walmart proposal: the standby allowance is higher (2 W instead of 1 W), there is no limit on active power, *but* Walmart would require a feature that would result in more hours of operation in standby mode. A deficiency of the CEC standard is that there is no mechanism to require or facilitate use of standby mode. The Walmart proposal, which was ultimately adopted by NTIA, will result in many more hours of operation in standby mode, resulting in potential additional increase in the savings compared to the CEC standard.

Table 2 shows a scenario for reasonable assumptions about hours of operation and power levels, in which the NTIA standard, while it *would allow greater power use* in both active and standby modes, *would save more energy than the CEC standard* because the auto power-down feature would increase the hours of operation in the lower power standby mode. That is, even with higher power allowances in the NTIA scenario, because hours of operation in standby would increase to 60% in the NTIA standard from 20% under the CEC standard, energy use is 5 kWh/year lower in the NTIA scenario.

Table 1

Energy and Cost Savings: Basecase v. CEC

Assumptions

DTA use (hrs/yr)	Hours	% hours
Active	7,008	80%
Standby	1,752	20%
DTA power (W)	Basecase	CEC std
Active	12	8
Standby	5	1
Elec cost (\$/kWh)	\$0.15	
Life (yrs)	5	
Number of DTAs	3,000,000	

Results

Savings/DTA	Basecase	CEC std	Savings
kWh/yr	93	58	35
\$/yr	\$13.93	\$8.67	\$5.26
\$/life	\$70	\$43	\$26
California savings	Basecase	CEC std	Savings
kWh/yr	278,568,000	173,448,000	105,120,000
\$/yr	\$41,785,200	\$26,017,200	\$15,768,000
\$/life	\$208,926,000	\$130,086,005	\$78,840,000
MW	36	24	12

Table 2

Energy and Cost Savings: CEC v. NTIA

Assumptions

DTA use (hrs/yr)	CEC standard		NTIA standard	
	% hours	hours	% hours	hours
Active	80%	7,008	40%	3,504
Standby	20%	1,752	60%	5,256
DTA power (W)				
Active		8		12
Standby		1		2
Elec cost (\$/kWh)				
	\$0.15			
Life (yrs)				
	5			
Number of DTAs				
	3,000,000			

Results

Savings/DTA	CEC standard	NTIA standard	Savings
kWh/yr	58	53	5
\$/yr	\$8.67	\$7.88	\$0.79
\$/5 yr. life	\$43	\$39	\$4
California savings			
kWh/yr	173,448,000	157,680,000	15,768,000
\$/yr	\$26,017,200	\$23,652,000	\$2,365,200
\$/life	\$130,086,000	\$118,260,005	\$11,826,000